Foreign Exchange Risk Exposure and the Forecasting of Foreign Currency Movements

An Honors Thesis (ID 499)

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Acknowledgments

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Defining Foreign Currency Risk Exposure

Todays businesses are facing an expanded global economy and a proliferation of new problems associated with this expansion. Foremost among the problems facing the managers of Multinational Corporations (MNCs) is controlling the foreign exchange risk facing their MNCs in a freely floating world monetary system. This paper looks at exposure risk as the loss suffered by corporations due to the unfavorable fluctuations in the value of foreign currencies. Foreign exchange risk affects the revenues and costs of the corporations involved and is defined as deviations from purchasing power parity. There are three forms of foreign exchange risk exposure: i) Translation exposure ii) Transaction risk exposure iii) Economic risk exposure (sometimes referred to as operational exposure). Translations exposure is an accounting exposure that occurs when the foreign assets are translated from its local currency into dollars. Translation exposure results in only paper losses and does not affect cash flows, however, many stockholders and analysts evaluate a corporation and its managers on the strength of the balance sheet and stability of its earnings in dollars. Translation exposure can have an effect on earnings that cannot be ignored.

Transaction exposure is the effect that changes in exchange rates have on the dollar revenue received on sales denominated in foreign currencies. Changes in exchange rates have quantifiable impacts on dollar costs and revenues from the expenses and sales denominated in foreign currencies.

Economic exposure (sometimes referred to as operational exposure) is the undermining of a MNC to price its products competitively while maintaining an acceptable profit margin. This is caused by several factors. The first factor of economic exposure important to U.S. MNCs is products being sold in markets that generate revenues denominated in currencies other than the currency in which production costs are incurred. The second factor is the operational risk recognized even where there is no mismatch between costs and revenues. This second factor arises from the situation of a U.S. firm competing against a market leader whose costs are incurred in a currency other than the currency of the country to which they export.[1] In this situation a U.S. producer is up against a market price set by reference to another currency. For example, if the cost based currency for a U.S. MNC were to appreciate against the cost based currency of a market leader, the U.S. corporation would face a declining return on sales or they would have to raise the price of the export and risk losing market share to the market leader. Economic exposure can affect even purely domestic businesses which compete with foreign MNCs in the U.S. market. Economic exposure is a serious concern to MNCs because it affects cash

flows.

When dealing with foreign currency exposure, an MNC must first decide whether it will undertake managing its foreign currency exposure at all. Some argue that stockholders can diversify against exchange risks by holding a portfolio of stocks, thereby eliminating the need for the MNC to manage its foreign exchange risk. However, this argument has been rebutted by experts who claim that it is more economical for the MNC to manage their foreign exchange risk because MNCs have superior knowledge and facility resulting in lower costs of defense against foreign currency exchange risks than do individual stockholders.

Managing Foreign Exchange Risk

Assuming an MNC has taken on the task of managing its own foreign exchange risk, the corporation must decide if it will manage its exposure at the subsidiary level or use a centralizing system which coordinates all the subsidiaries for the larger interests of the parent company. A decentralized form of managing foreign exchange risk would allow each subsidiary to do what it feels best for its own profitability. Implementing decentralized management would be relatively easy because the costs of exposure management are easy to isolate.[2] Decentralized exposure management, with its sole emphasis on subsidiary performance, may have negative effects on the parent company. With each subsidiary

controlling its exposure management independently there will be inefficiencies in hedging decisions when viewed from the perspective of the parent company. For example, a subsidiary may choose to hedge an open position to protect its earnings when another subsidiary may have an exactly opposite open position it wishes to hedge and the correct decision for the benefit of the parent company would be to not have either subsidiary hedge at all due to the counterbalancing effect of each open position. For this reason a centralized approach to managing foreign exchange is recommended for most MNCs. The major advantage of a centralized method of handling foreign exchange exposure is that it allows for accumulation of transaction exposure into one legal identity versus several legal and tax entitys with a decentralized system.

Centralization of exposure management for an MNC requires sophisticated methods of control and evaluation over subsidiaries. The system must fairly allocate costs to those subsidiaries that incurred them. Centralized management of foreign exchange risk enables a firm to reap economies of scale and use arbitrage opportunities at the global level. Centralized management uses a currency netting system that acts as a clearing process for payments among the subsidiaries. This netting system reduces the float in funds as well as bank fees and transaction costs.[3]

With a centralized framework in place, the next step is to examine the methods a MNC can use to reduce their foreign exchange exposure.

When a company decides to employ strategies to reduce their foreign exposure, its goal is to reduce the firms exchange losses and to stabilize its earnings. Steady earnings are very important to companies because of the favorable effect they have on stock prices.

The strategies used by MNCs vary depending upon the type of exposure (translation, economic, transaction) they are defending against. Thus, we find MNCs are not defending against translation exposure with cash instruments like forward contracts, if they defend against it at all. New accounting standard (FSAB-52) has helped relieve the pressure of translation exposure by ruling that inventory and fixed assets are monetary assets rather than historic-rate assets. However, MNCs defending against transaction exposure are willing to take risks to protect the cash value in dollars of their long term contracts against adverse changes in exchange rate movements. MNCs are much more willing to justify the use of cash to defend against transaction/economic exposure than to risk cash to defend against translation "paper" losses. (Srinvasulu, p. 38)

The following are some of the specific major strategies MNCs use to attain their foreign exchange management objectives.

Pricing and Inventory Strategies

An effective method for protecting against currency

devaluations is to mark up the selling price in local and export markets. This method cannot protect against exchange losses but it can help defend against large fluctuations which is of the highest concern to MNC managers. Unfortunately, this strategy may be impossible for many MNCs which are not market leaders. The effectiveness of this strategy depends on the competitive position the product has in the market place and the price elasticity of the product. If the MNC's product is not a market leader, then customers will simply substitute a competitor's product if the local price is increased. Even market leaders may have customer resistance and increased competition from a domestic price increase. A survey by Vinh Tran of foreign management executives revealed that this method is used frequently by MNC subsidiaries that export to developing countries. Tran surveyed ten Fortune 100 MNCs to determine how prevalent their use was of different defensive techniques. Results showed that all ten MNCs used pricing strategies for increasing export prices and local prices with the majority of companies characterizing their use as only "occasionally". However, the survey revealed that increasing/decreasing of intersubsidiary pricing of products was used by only half of the MNCs.[4]

Leads and Lags

Leading and lagging strategies are used to shift

exposure of currency value fluctuations to the seller/buyer. Leading/lagging can be a good defensive strategy against depreciating currencies by reducing the levels of accounts receivable and increasing the levels of accounts payable in particular currencies.

An application of the leading strategy would be to offer a discount on prompt payments while discouraging late payments by levying late charges on past due accounts or by modifying the credit terms extended to customers. Clearly, the ability to predict future currency movements is vital for the success of this strategy because companies must negotiate credit terms in anticipation of future currency movements.

The lead/lag strategy contains shortcomings that have limited its use among corporations. The competitive strength a company has in a market can limit the ability it has to modify credit terms. A corporation must consider vendor and customer resistance to such practices otherwise the corporation may find itself without a supplier and/or a shrinking market share.

Results of the ten corporations surveyed by Vinh Tran showed that most corporations do use leads and lags (8 of 10). However, half of these do so only "occasionally". Also, the survey revealed that corporations were less likely to lag payables than lead receivables because of the image the corporation wanted to project. As one corporate officer said, "We try to maintain a good image in the market which means you pay your bills". Overall, this strategy has not

been used extensively by most MNCs.[5]

Inter-Company Accounts Adjustments

Inter-company accounts adjustments are directed toward shifting the exposure in one currency into a direction consistent with exchange rate forecasts. For example, a company would want to shift cash outflows into depreciating currencies and inflows into appreciating currencies. Essentially, the goal of inter-company accounts adjustments is the shifting of exposure from one currency to another. As with leads and lags, ability to obtain accurate foreign currency forecasts is critical to the success of the inter-company accounts adjustment strategy. Forecasting currencies is a subject which will be discussed in a later section of this paper.

MNC's use of inter-company accounts adjustments is widespread, in fact, everyone of the ten sampled MNCs used this form of currency exposure management. One form of the inter-company accounts adjustments strategy, the accelerating/delaying of dividend remittance to the parent company, was found to be used by over half of the sample. The companies characterized their use of this strategy as "usually" or "always". The widespread acceptance of inter-company accounts adjustments is due to of its low costs.

In order for the inter-company accounts adjustments strategy to be useful, there must be a sufficient amount of

inter-company transactions. Also, local laws and regulations can affect implementation of any dividend remittance strategy. Inter-company accounts adjustments strategy can only be used by MNCs that use a centralized form of currency management.

The three major forms of inter-company accounts strategies are leading/lagging payables and receivables, accelerating/delaying dividend remittances to the parent company, and adjusting the dividend flows remitted to the parent company.[6]

Debt and Working Capital

This strategy is the management of debt and working capital with regard to currency denominations. Foremost in this strategy is the restructuring of debt as the movement of currencies, both foreign and domestic, dictate. Restructuring is done with both long and short term debt.

The use of local and foreign currency borrowing for exposure management is very popular. All ten of the corporations sampled by Tran used this strategy of exposure management. Some of the foreign exposure management techniques that employ the use of debt and working capital include local and foreign currency borrowing, prepayment of bank loans, adjustments to parent company's planned investments, reduction of short-term assets while increasing short term liabilities, and negotiating foreign currency and

credit swaps.

Foreign currency swaps allow parent companies to lend hard currencies to their subsidiaries at reduced exchange rate risk. A foreign currency swap occurs when the parent company buys the subsidiary's local currency while simultaneously engaging in a forward contract to sell the local currency. If no forward market exists then a credit swap can be employed. A credit swap transaction is when the subsidiary's local bank agrees to a loan for the subsidiary in exchange for a hard currency loan from the parent company.

Inter-Currency Netting

Inter-currency netting is a strategy of diversifying foreign exchange risk across several currencies. It implies a willingness to accept an open position in one currency in the anticipation that the resulting gain or loss will be offset by an opposing gain or loss in another currency.[7] This strategy is used frequently with currencies that have exhibited a high degree of correlation in their exchange rate movements. In this way, a corporation can match revenue and expenses with currencies that strongly reflect one another in their currency movements.

Results from the ten companies surveyed by Tran indicate that nine of the ten have used this strategy to some extent.

Forward Exchange Contracts

Forward exchange contracts enable companies to hedge or cover their exposed foreign currency positions by purchasing a currency in the forward market.

Forward exchange contracts are used by companies to hedge against transaction losses by producing gains on the forward contracts themselves, which offset the losses on transactions due to currency movements. Transaction hedging, using forward contracts, is very common. Tran reported nine of the ten surveyed companies used this technique. Payments of receipts arising from import and export transactions, repayment of loan obligations, payments of dividends, royalties, management and licensing fees, and off balance sheet items all lend themselves to forward contract hedging.

Despite the widespread use of forward contracts, there is some evidence that forward contracts may be inefficient at defending against exchange rate risks. A 1984 study by M.I. Javaid on U.K. MNCs revealed that most would rather give up trade concessions (referred to as opportunity costs) than incur the nominal costs of hedging a foreign currency. The reasons for this include the facts of inappropriate matching of maturities, ignorance, and exchange rate expectations. Also, for some, the costs of short term borrowing were too high.[8]

Foreign Exchange Risk and Forecasting of Exchange Rates

The ability to forecast the direction and magnitude of a foreign currency change can be crucial to the success of a currency management program. Forecasting is also important in planning a company's financing, purchasing of raw materials and marketing strategies. Therefore, this paper will examine the currency forecasts that MNCs use to plan their currency exposure management. It will also examine how the forecasts are developed and assess the performance of these forecasts in terms of accuracy and timeliness. In addition, some of the key variables used in foreign currency forecasting will be examined.

There is a huge demand for foreign currency forecasting. It is estimated that every Fortune 500 company employs at least one foreign currency forecasting service. There are scores of other businesses that employ forecasting services as well. This may be a surprising fact when one considers the cost for some of these services. Top of the line forecasting services can cost in excess of $100,000 annually.[9] The financial value of these services are questionable from the executive point of view. Many interviewed executives were less than highly satisfied with their forecasting services. Part of the explanation for the booming currency forecasting industry is that top management need 'scapegoats' to point to when explaining poor performance to shareholders, boards of directors and trustees. This may

relieve some of the blame put on top management teams that are unsuccessful in defending against foreign currency exposure. The second reason is that forecasting services are providing more than just future predictions of currency movements: they are also providing broad financial planning services. Given foreign currency movements, many services provide integrated financial services including international tax strategies, assessing funding and exposure implications in making foreign exchange decisions, long range financial planning, and financing decisions.

How Foreign Currency Forecasts are Made

Forecasts are divided into three different groups. The first, subjective evaluations based on economic, political and technical factors, is sometimes called the "seat of the pants approach". The second approach, called the fundamental forecasting approach, uses econometric models. Econometric models are large complicated mathematical formulas utilizing variables such as interest rate differentials, relative inflation rates, balance of payments flows, reserve asset positions and many others to arrive at an estimate. The third type of forecast is the technical forecast. Technical forecasts relate historical currency movements to future movements. Technical analysts use charts to compare past movements with today's underlying fundamental factors to predict future movements. Technical forecasts provide

exchange rate movements rather than point estimates.

Accuracy of Currency Forecasts

If an argument can be made that the foreign exchange markets are efficient, then there is no place for forecasting agencies. Market efficiency implies that all current information is reflected in current prices and that historical records contain no insight into future currency movements or spot rates. Thus, by definition, the technical method would not be effective to earn a profit in the foreign currency market. A corollary to the view that the foreign exchange market is efficient is the idea that the forward exchange rate is a good predictor of the future spot rate. However, studies have shown the forward rate to be a poor predictor. For example, the best auto-regressive models generally provided a more accurate indication of the future spot rate than did the forward rate.[10] It would follow that if forecasting services can consistently outperform the forward spot rate, they would prove very valuable to corporations trying to reduce their foreign currency exposure.

Evaluation of Forecasting Accuracy

The following section of this paper will look at studies evaluating the ability of forecasting services to

consistently outperform the forward rate. As mentioned before, forecasts are based on either subjective analysis, econometric models or technical analysis. Because it lacks a replicative model or rules, subjective models will not be evaluated in this paper.

The first study contains six forecasting services that use econometric models and three services that use technical rules based on mathematical momentum models. A fourth technical service uses a chartist approach. The study covered forecasts made during the time period 1978-1982.

The survey's first purpose was to calculate the percentage forecast error for each currency and advisory service. The survey recorded the forward rates ($F_{t,n}$) and the forecasts themselves ($\hat{S}_{t,n}$) for each origin date and the actual future spot rate ($S_{t,n}$). The method of calculation was

$$\Sigma(t,n) = (S_{t,n} - \hat{S}_{t,n}) \; / \; (S_{t,n})$$

where n = 3,6,or 12mo.

The second purpose was to determine the percentage of correct forecasts. A forecast is considered correct if the forecasted spot rate and the actual future spot rate are on the same side of the forward rate. A correct forecast would lead a manager to the correct hedging decision. Lastly, was to determine whether the number of correct forecasts is above 50% and then determine whether a forecasting agency is considered to have expertise based upon a statistical analysis using the normal probability curve. The idea is to determine if the results can be explained by random chance or

whether the forecasters can consistently predict future spot rates.

Results on percentage correct show that 6% of the forecasts exceeded 70% correct values and that 18% of the forecasts were better than 60% correct.[11] Statistics disproving expertise in forecasting show that random luck can explain most of the significant track records when considering all services together. Thus, as a group, forecasters showed no expertise in predicting currency fluctuations during the 1978-1982 period. Although a few services can be expected to have outstanding forecasting ability in the future based solely on random chance, these cannot be identified from the 1978-1982 analysis. The results from the 1978-1982 study can be found in Appendix 1.

In identifying forecast services that were more accurate than the forward rate, Richard Levich divided the mean absolute forecast error by the absolute forward rate error. Ratios less than one are more accurate than the forward rate. Percentages of forecasts better than the forward rate were 5%, 14%, 25% and 32% for the 3, 6, 9, and 12 month horizon respectively. This evidence shows that advisory services as a whole are not better predictors of the future spot rate than is the forward rate.

The study showed that most forecasters performed well on the Yen and Sterling but poorly on the Deutschmark. The study also revealed that all forecasters were unable to predict short term currency fluctuations.

The second survey, conducted by Stephen Goodman, examined eight forecasting services over a six month period. Of the eight services used, five were econometric models while three relied on technical analysis. The services were evaluated on their predictive accuracy as measured by the share of forecasts that correctly identified the direction of the future spot rate. The services were also evaluated on how accurate their point estimates were. Point estimate accuracy was based on the forecasts that came closer to the future spot rates than did the forward rates. Further evaluation of the forecasts included the speculative return on the capital at risk. Speculative return is defined by Goodman as the incremental return above the dollar interest rate a speculator would earn if he blindly followed the forecasted change in exchange rates relative to the forward market premium and discount.[12]

Results revealed that the econometric models did poorly predicting the direction of short term currency fluctuations. The results also showed only a 50% accuracy in predicting the direction of a currency movement compared with the 58% accuracy of the forward rate. The study also noted that econometric models were poor at deriving point estimates in the short term. Overall, the forecasting agencies were 7% less accurate than the forward rate.[13]

Results from speculative return on capital at risk are marginally profitable but less profitable than a buy and hold strategy over the same period. Pretransaction cost returns

averaged 1.12% annually for the econometric models. Despite the overall average gain on speculation, there will be periods of considerable loss for most currencies, thus making the risk adjusted return very unattractive.

The technically based forecasts outperformed the econometric models in every area the survey examined. Speculative return was between 7.28% and 10.46% for the technical models. Technical forecasts do not yield point estimates so this could not be measured to compare the results against the econometric models.[14] It is worth mentioning that the study only covered a six month period which favors the technical models.

The interpretation of the results from this study would indicate that corporate treasurers would be better off using a technically based forecast when evaluating short term hedging strategies.

The results based on this study can be found in Appendixes 2 through 5.

Summary

The irreversible trend of globalisation means that corporations will continue to face the problem of foreign currency exposure. Thus, corporations and financial services must continue to develop methods of efficiently and effectively reducing the risks of foreign currency exposure.

Thus we see MNCs increasingly turning to centralization of exposure management in an effort to control their foreign exchange risk. In addition to centralized management, MNCs use a combination of foreign exchange risk management tools such as pricing strategies, leads and lags, inter-company accounts adjustments, forward exchange contracts, foreign currency swaps, etc. These tools are becoming more sophisticated and powerful in order to meet the demands of the MNC's foreign exchange risk management needs. Presently, there is little indication that forecasters have any expertise in predicting foreign currency movements. In fact, the vast majority of forecasting service performances can be explained by chance alone. The poor performance of forecasting services coupled with the high cost for their services renders buying these services financially unsound. Management may find comfort in using the services as a way to defend against criticism from shareholders by blaming the forecasters for poor MNC performance. Regardless, at present the forward rate outperforms most forecasting services.

Despite the dismal record of forecasting services to date, there is reason for MNCs to be optimistic in the future. One reason is that the results from these studies were from the early 1980s when the currency forecasting industry was in its infancy. Given time, there is a good chance that forecasters will gain a better understanding of the dynamics that determine currency movements. This may result in new and/or improved mathematic models on which to

base forecasts. Second, new financial instruments are being created everyday by the brightest minds on Wall Street to help solve hedging problems faced by corporations. An example would be the more flexible forward contracts in terms of maturity and value.

NOTES

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10. Stephen H.Goodman, "Foreign Exchange Rate Forecasting Techniques: Implications for Business Policy," The Journal of Finance, XXXIV. (1979) p 416.

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13. Stephen Goodman, p 81.

14. Stephen Goodman, p 84.

15. Christine Hekman, "Measuring Foreign Exchange Exposure: A Practical Theory and its Application," Financial Analyst, (Oct. 1983) pp 59-64.

16. Richard Levich p 142.

17. Stephen Goodman p 82.

18. Stephen Goodman p 82.

19. Stephen Coodman p 83.

20. Stephen Goodman p 84.

APPENDIX - 1

The following table shows the percentage of total correct forecasts for ten forecast services during the period 1977 - 1982.[16]

Econometric based (1,4,7,8,10) Technical (6,9)

Judgemental (2,3,5)

		1	2	3	4	5
	1977-80	57.46	40.32	61.24	52.50	na
(1mo)	78-81	51.54	35.29	56.06	51.83	na
	79-82	46.30	31.83	49.38	51.67	48.07
	1977-80	54.28	33.34	47.55	47.50	na
(3mo)	78-81	51.54	34.31	44.95	52.44	na
	79-82	44.91	31.23	42.47	54.44	38.39
	1977-80	45.40	37.14	43.93	50.00	na
(6mo)	78-81	43.50	37.26	48.23	56.10	na
	79-82	42.55	38.39	50.76	55.11	56.57
	1977-80	35.56	33.33	33.59	48.33	na
(1yr)	78-81	29.31	32.35	40.40	48.78	na
	79-82	26.29	29.52	48.24	46.15	55.56

		6	7	8	9	10
	1977-80	53.33	45.22	57.64	50.00	57.78
(1mo)	78-81	45.64	40.34	49.77	48.32	53.14
	79-82	48.43	43.54	48.84	44.68	52.70
	1977-80	57.04	49.35	61.11	53.33	71.72
(3mo)	78-81	49.60	45.41	53.01	52.53	59.90
	79-82	50.71	45.35	48.15	50.59	61.27
	1977-80	58.52	51.42	62.04	61.11	65.66
(6mo)	78-81	50.79	48.07	55.32	62.53	62.32
	79-82	53.51	49.64	47.99	47.99	57.73
	1977-80	56.30	54.52	65.05	61.76	69.70
(1yr)	78-81	40.87	48.31	55.33	56.94	70.05
	79-82	41.32	51.76	46.07	61.85	73.41

APPENDIX - 2

The following table shows the percentage of correctly forecasted spot rates for several forecasting services . A correct forecast is one that correctly identifies the direction of the future spot rate. The forcasters in the data all used econometric models as the basis for their forecasts.[17]

	Berkely	DRI	Predex	#4	#5	Average
Canadian $	.60	.27	.13	.37	na	.34
FF	.57	.33	.40	.38	.57	.46
DM	.24	.63	.41	.33	.53	.45
Swiss Franc	na	na	.30	na	.10	.20
Sterling	.70	.33	.47	.40	.48	.48
Average	.50	.43	.34	.34	.42	.43

APPENDIX - 3

The following table shows the percentage of forecasted spot rates for each service that were closer to the actual future spot rate than the forward rate was to the actual future spot rate.The results were for a six month period and only forecasts from econometric models were used.[18]

	Forward Rate	Berkely	DRI	Forex	#4	#5
Canadian $	.62	.65	.53	na	.31	na
FF	.37	.63	.43	.30	.27	.25
DM	.67	.57	.77	.60	.45	.63
Yen	.54	.50	.67	.67	.37	na
Swiss Franc	.80	na	na	na	na	.10
Sterling	.50	.60	.63	.60	.37	.29

APPENDIX - 4

The following table shows the speculative return on capital for three forecasting services during a six month period. All forecasters in this table used technical models to derive their forecasts.[19]

B = buy S = sell T = total NT = no. of transactions

		Int'l Forecasting	Shearson	Waldner	Average
	B	0.99	4.61	2.50	2.70
Canadian $	S	4.60	5.19	6.22	5.34
	T	5.59	9.80	8.72	8.04
	NT	-5-	-17-	-11-	-11-
	B	(2.42)	na	3.82	0.70
FF	S	(3.66)	na	0.53	(1.57)
	T	(6.08)	na	4.35	(0.87)
	NT	-5-	na	-15-	-10-
	B	10.49	8.78	7.35	8.93
DM	S	2.46	3.02	1.19	2.22
	T	12.95	11.80	8.72	11.16
	NT	-5-	-25-	-13-	-14-
	B	12.42	10.95	11.78	11.72
YEN	S	(1.73)	(1.63)	(1.52)	(1.63)
	T	10.69	9.32	10.26	10.09
	NT	-5-	-21-	-12-	-13-
	B	9.52	12.99	2.76	na
SwissFranc	S	2.07	3.11	(10.28)	(1.70)
	T	11.60	16.10	(7.52)	6.73
	NT	-5-	-22-	-14-	-14-
	B	6.70	2.62	9.24	6.19
Sterling	S	5.55	2.64	9.93	6.04
	T	12.25	5.26	19.17	12.23
	NT	-4-	-24-	-12-	-13-
Average	T	7.83	10.46	7.28	7.90
	NT	-4-	-24-	-12-	-13-

APPENDIX - 5

The following table shows the speculative return on capital for five forecasting agencies during a six month period. The table also shows the return on a buy and hold strategy for the same period. All forecasters use econometric models as a basis for their forecasts.[19]

B = buy S = sell T = total

		Buy and Hold	Berkely	DRI	Forex	#4	#5	Avg
	B	(15.12)	2.52	(2.88)	na	(.60)	na	(1.48)
Canadian$	S		6.88	5.16	na	3.52	na	3.37
	T	(15.12)	4.40	1.64	na	0.28	na	0.68
	B	3.20	7.32	5.76	2.40	3.24	10.08	6.00
FF	S		2.28	(.64)	(3.16)	(2.68)	13.80	(2.39)
	T	3.20	4.20	1.40	.02	.08	2.60	2.37
	B	6.80	5.72	10.00	6.52	16.08	10.84	9.95
DM	S		(13.92)	(1.96)	(7.00)	(4.04)	(4.88)	(6.03)
	T	6.80	(1.56)	5.80	(1.60)	(.64)	(.36)	1.39
	B	12.52	7.36	15.56	12.92	4.80	na	12.34
Yen	S		(16.40)	13.68)	(8.92)	(15.76)	na	(12.86)
	T	12.52	(5.32)	3.88	6.16	(7.96)	na	(1.13)
	B	9.64	na	na	na	na	na	18.80
Swiss F	S		na	na	na	na	na	(6.12)
	T	9.64	na	na	na	na	na	0.52
	B	0.12	14.04	4.56	8.40	2.16	6.20	6.35
Sterling	S		10.48	(12.40)	4.68	1.12	(9.32)	(.50)
	T	0.12	12.04	(2.24)	6.04	1.52	(2.52)	2.91
Average	T	2.86	2.75	2.10	2.66	(1.09)	.15	1.12

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